

Minutes on data acquisition, reduction, visualization  
Mikhail Feygenson

Mikhail Feygenson (DREAM) discussed his latest experience at NOMAD beamline, in which the translation process corrupted the data due to high data rates 750 000 n/s. The highest count rate detected at SNS was 5 000 000 n/s (VISION). The DREAM instrument will exceed these data rates by at least factor of 2 during the first day of operation. We must be prepared to handle such high data rates from the day one.

Xavier Fabreges (MAGIC) describes his experience at TOPAZ beamline at SNS. The planning and execution of the experiment happen in two separate steps, which requires switching between different computers. The process is prompt to mistakes. He noted that the following capabilities are missing in the instrument control:

No scripting capabilities

No loops

No feedback from data reduction system

Data reduction is done in Mantid.

The biggest issue is the speed of data reduction. It takes about 4 hours to process 1 hour measurement. At MAGIC instrument 10 times more events are expected (plus polarization information). Thus, existing algorithm at TOPAZ is not sufficient to support quick data reduction at MAGIC.

All of these issues must be addressed for the data reduction at MAGIC.

The following comments were made during the discussion:

The longest step in data reduction is converting event mode into q-space (binning)

We should look more at solutions at the synchrotron sources for fast data reduction

There is lot of functionality for single crystals that is missing in Mantid.

DMSC is working with the real diffraction data from POWGEN to optimize data reduction algorithms.